

# Pesticide Use Reporting

California's pesticide use reporting program is internationally recognized as the most comprehensive of its kind. DPR annually collects and processes more than 2.5 million records of chemical applications. (Single pesticide applications would generate more than one record if there are multiple chemicals applied.) California was the first state to require full reporting of all pesticide use in agriculture.

Under full use reporting, the following pesticide uses are required to be reported to the County Agricultural Commissioner, who, in turn, reports the data to DPR:

- for the production of any agricultural commodity, except livestock;
- for the treatment of postharvest agricultural commodities;
- for landscape maintenance in parks, golf courses, and cemeteries;
- for roadside and railroad rights-of-way;
- for poultry and fish production;
- any application of a restricted material;
- any application of a pesticide with the potential to pollute ground water (listed in regulation), when used outdoors in industrial and institutional settings; and
- any application by a licensed pest control operator (PCO). PCOs include ground and aerial agricultural applicators, structural applicators, and professional landscape gardeners.

Reports include the amount and name of pesticide applied, date and location (section, township, range) of the application, and crop, if the application was agricultural. The primary exceptions to the use reporting requirements are home and garden use and most industrial and institutional uses.

Pesticide use reports help DPR estimate dietary risk and ensure compliance with clean air laws and ground water regulations. Site-specific use report data, combined with geographic data on endangered species habitats, help County Agricultural Commissioners resolve potential pesticide use conflicts. DPR also uses the data to analyze how, when and where pesticides are used on different crops. Reduced-risk pest management alternatives can then be developed considering the different regions of the State and the commodities grown in these regions.

## History of Use Reporting in California

California has had limited use reporting since at least 1950. Then, the Department of Agriculture (DPR's predecessor) reported that the County Agricultural Commissioners "required agricultural pest control operators to submit monthly reports on their work." County requirements varied, but many included a statement for each application, showing the grower's name, location, spraying dates, crop, acres or other units treated, target pest, kind of pesticide used, and the strength and amount of the spray or dust mixture applied. Only statistics on aerial pesticide applications were forwarded to the State for statewide tabulation. In 1955, State regulators asked for reports on ground application acreage, but dropped the requirements for detailed reporting of pesticides used and commodities treated.

In 1970, the regulations changed, and farmers were required to report all applications of restricted pesticides. PCOs were required to report all pesticides used, whether

*If it were not for the insect pests and diseases which prey upon fruit and vegetable crops, the frosts of winter and heat waves of summer, we could figure our acreage production with considerable accuracy. Unfortunately, there have been times when the pest problem has not only restricted but threatened almost to eliminate some of our crops from commercial circulation.*  
— 1931 Department annual report

***The agricultural chemical problems in California are more numerous and more complex than in most other states. Farmers of California produce more than 200 different commercial crops in a terrain that includes the highest and the lowest altitude in the United States. Many of these specialty crops are not produced elsewhere. The rainfall varies from less than two inches a year in dry interior regions to over 100 inches near the coast. The growing season varies from a full 365 days a year in some areas to less than 100 days in others. Some areas never have snow, others have as much as 37 feet. Dense redwood forests grow in some parts of the State and other parts are desert wastelands. ....***  
(see next page)

restricted or nonrestricted. Both kinds of reports had to include the pesticide applied, date and location (section, township, and range) where the application was made, and the crop involved if the application was in agriculture. The reports were filed with the agricultural commissioner in the county where the applications were made and were reported, in turn, to the State, which entered the reports into a database and summarized it in annual publications.

The Food Safety Act of 1989 (Chapter 1200, AB 2161) gave the Department clear statutory authority to require full reporting of pesticide use. That year, the Department adopted regulations and full use reporting began in 1990. Reports are filed with the agricultural commissioner in the county where the applications occur. Commissioners send reports to the Department (most do so electronically), and information is entered into the statewide database.

Full use reports include the date and location (section, township, and range) for the application and the kind and amount of pesticides used. If the pesticide is applied to a crop, it must be specified. Two new data items — operator and site identification — were added to help determine and calculate the actual percentage of crops treated. These data are useful in making pesticide risk assessments.

### The Use Reporting Process

Before the purchase and use of pesticides, every property owner (or operator) is required to obtain a unique identification number from any county in which pest control work will be performed. Growers also obtain a site identification number from the County Agricultural Commissioner for each location and crop/commodity where pest control work will be performed, and this ID number is recorded on the restricted material permit or other approved form.

The information that must be reported for agricultural applications includes geographic location including the section, township, range, base, and meridian; operator identification or permit number, name and address; field location and site identification number; commodity/crop/site treated; acres or units planted and treated; application method (air or ground); amount of product applied along with its name and U.S. EPA/California registration number.

Non-agricultural applicators submit monthly summary reports that include only pesticide product name and manufacturer, the product registration number, amount used, number of applications, the kind of site treated (e.g., roadside, structure), and total number of applications of all pesticides.

Reports are submitted to the County Agricultural Commissioner's office, where they are reviewed by staff for accuracy, and entered into a county database. The data is transferred monthly to DPR. Fifty-six of the State's 58 counties — representing 99 percent of the reported pesticide use — transfer records electronically.

### Improving the Process

***The California Electronic Data Transfer System (CEDTS)*** was developed in 1991 by DPR in cooperation with the University of California and the Kern County Agricultural Commissioner's Office. Using standard modems and local telephone lines, this program provides the basis for transferring notices of intent and pesticide use reports from pest control operators, growers, and others to the County Agricultural Commissioners' offices. CEDTS helps make the full use reporting process more efficient, and improves the quality and timeliness of the data.

Growers and PCOs use many computer systems and software applications in their day-to-day farming and business operations. The CEDTS program does not place hardware or software requirements on industry participants, other than what is required for actual electronic transfer. The only limitations are placed on the data itself, which must meet the specified transmission format. Detailed system requirements and documentation can be obtained from DPR or from County Agricultural Commissioners.

Although response to CEDTS from pesticide users was favorable, adoption of the reporting system was slow. Many growers and pest control operators lack the time and

expertise to write the software that pulls together the necessary pieces of information into a single pesticide use application database that meets DPR's standardized data requirements. In response, in 1999, private software providers and others began introducing systems that allow use reporting via Internet Web sites. In addition, new programs are being developed to allow nonagricultural users of pesticides to file electronic reports.

**Site Identification (ID) and County Mapping Assistance:** During the first 10 years of full use reporting, site IDs were only unique when combined with the grower identification and often the commodity. They did not refer to parcels or specific geographic locations. Site IDs changed from year to year for the same grower, and also with changes in land ownership and property management. Evaluating historical pesticide use geographically, to the degree now often required, was nearly impossible under the existing site ID system. In December 1994, a pilot project provided training for county commissioner staffs in standard mapping techniques, procedures, and map interpretation. This was the first step in the development and implementation of a standardized site identification system. The training provided the skills and materials needed to locate sites (fields) on large, detailed topographic maps which could then enhance the assessment of environmental conditions at application sites and enable long-term tracking of applications on a geographic site-specific basis. Subsequently, the computerized permit programs were revised to include geographic information system (GIS) capabilities to capture the mapping coordinates of field sites and the supporting data. DPR has developed tools to allow field sites to be identified geographically, but with changing technological capabilities at the commissioner level, the department's primary function is now to provide technical expertise and support to the evolving county-level GIS programs.

**Improving the Accuracy of the Data:** The use report data is checked for accuracy at several steps in the process. After a record has been entered into the county database, the computer compares the pesticides reported used to those listed in the grower's permit files. (For the two counties not electronically processing their data, county biologists review the reports.)

As the use reports are loaded into DPR's database, upwards of 50 different validity checks are made against the data. In particular, the U.S. EPA or California registration number is verified and a check is made to validate that the commodity reported is an acceptable use of the pesticide product. Records with errors are returned to the county for resolution.

As a final error check, in 1997 and 1998, DPR specialists spent more than a year developing, testing, and implementing software to detect highly unlikely use rates (outliers). This method examines each record of pounds of active ingredient reported used per acre and compares it to a statistically developed normal application rate for each pesticide and commodity combination. Pesticide rates are considered outliers if (1) they are higher than 200 pounds of active ingredient per acre (or greater than 1,000 pounds per acre for fumigants); (2) they are 50 times larger than the median rate for all uses with the same pesticide product, crop treated, unit treated, and record type (that is, production agricultural or all other use); or (3) they are higher than a value determined by a neural network procedure that approximates what a group of 12 scientists believed were obvious outliers. This round of error checks typically removes only a small percentage of the records, typically less than 1 percent. However, a few errors are so large that if included they would significantly affect total pounds applied of the pesticide.

**Improving Access to the Data:** In the late 1990s, DPR took steps to improve public access to the data, and present it in a more meaningful context. Summaries of the statewide data (indexed by chemical and by commodity), long available on paper and diskette, were made available online. County summaries of use, which previously had only been available upon request, were also posted online. DPR supplemented the use data with a major study published online: *Pesticide Use Analysis and Trends from 1991 to 1996*. The study examined critical crops, pest problems, and high-use chemicals. The study also analyzed trends in pesticides where use was highest as measured in pounds, number of applications, and acres treated; this trend analysis has continued to be presented with pesticide use reports in subsequent years.

... More than 1,100 separate and distinct soil types have been recognized and mapped in the soil surveys of California. It is evident that California farmers are faced with a complex problem in selecting and using fertilizing materials and pesticides intelligently and effectively. Materials and agricultural practices of value in other parts of the country may be of little or no value in California. A vigilant and careful examination of all agricultural chemicals offered for sale in this State is necessary in order that farmers may purchase and use the chemicals they need for growing and protecting their crops in full confidence that these materials will meet the guarantees made for them.  
— 1946 Department annual report

However, the summary reports present only a fraction of the use reporting database (typically a 650-megabyte file). Outside researchers and others who wanted to analyze the complete database in previous years could do so only by purchasing a data tape, which is cumbersome to use and requires specialized equipment. In 1999, DPR made the entire use report database from 1990 on available on CD-ROMs. In 2000, DPR was in the planning stages of developing software and purchasing equipment that would allow complex online queries of the database via DPR's external Web site.

### How DPR Uses the Data

The expansion of use reporting was primarily undertaken in response to concerns by many individuals and groups, including government officials, scientists, farmers, legislators, and public interest groups. It was generally acknowledged that more accurate information about pesticide use would provide a better base for evaluating pesticide impacts and making regulatory decisions. Several key areas in which data are proving useful are described.

**Risk assessment:** Without information on actual pesticide use, regulatory agencies must assume all planted crop acreage is treated with many pesticides even though most crops are treated with just a few chemicals. If the assumptions used by regulatory agencies are incorrect, regulators could make judgments that are overly cautious by several orders of magnitude. The use report data provides actual use data so DPR can better assess risk and make more realistic risk management decisions.

**Worker health and safety:** Pest control operators are required to give farmers a written notice after every pesticide application that includes the date and time the application was completed and the restricted-entry and preharvest intervals. The restricted-entry interval is the period required between a pesticide application and when workers may re-enter the field. The preharvest interval is the time between an application and the earliest date the crop may be harvested. Farmers are required to post signs at fields treated with certain pesticides. The signs must include information on pesticide use including when it is safe for workers to re-enter the treated area. Farmers must also make records of pesticide use available to workers. Use reporting makes this information readily available.

DPR's Worker Health and Safety Branch relies on use reporting data when doing exposure assessments, which is a part of the overall risk characterization process. Using this data, scientists can determine typical application rates and how often pesticides are used.

**Endangered species:** DPR is working with the County Agricultural Commissioners to combine site-specific pesticide use data with data on the locations of endangered species. The combined information helps commissioners resolve potential conflicts between pesticide use and the protection of endangered species. Location-specific data on pesticide use brings more accuracy to the evaluation of the possible impact of pesticides on endangered species so that use restrictions can be developed and implemented to protect fish and wildlife.

**Protecting air and water:** In meeting the requirements of the Pesticide Contamination Prevention Act of 1985, site-specific records help track pesticide use in areas that are susceptible to ground water contamination. By reviewing pesticide use data, a determination can be made whether a well became contaminated due to legal agricultural use practices.

With full pesticide use reporting, specific agricultural practices can be pinpointed to help protect surface water as well. This helps DPR in making recommendations on alternate pest control practices that protect surface water while ensuring pest control needs are met.

The federal Clean Air Act requires states to develop plans for reducing the emissions of volatile organic compounds, or VOCs, from all chemicals including pesticide products. VOCs help form smog which is harmful to both human health and vegetation. Accurate data on the amount of VOCs produced by pesticides are critical to developing measures that reduce VOC emissions. Without a state plan, the federal government could use arbitrary assumptions of the smog-contributing potential of pesticides to

*The Department does not issue recommendations regarding use of pesticides, nor does it supply formulas for them. However, it believes that cooperation and education are among the most desirable and eventually the most potent means of law enforcement, and accordingly tries to improve every opportunity to outline and to explain the requirements of law to all concerned.*

— 1941 Department annual report

impose unnecessary restrictions on pesticide use. DPR worked with the State Air Resources Board and the U.S. EPA to develop a plan based on the actual VOC emissions from pesticide products. This was made possible, in part, by accurate use data from full use reporting.

The pesticide use and label databases are often used to assess potential environmental impact in evaluating requests for special local need pesticide registrations or exemptions from registration to respond to emergency pest problems.

***Pest management alternatives:*** The Department is using the use reporting database to look at what pesticides are used on various crops. Reduced-risk pest management alternatives can then be assessed considering the different regions of the state and commodities grown in these regions.

*Even those of us who have lived  
in California for many years  
scarcely realize the important  
lead which California has taken  
and is taking in the subject  
of pest control.*

– 1922 Department annual report

